UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/724,742	12/02/2003	Hung Kun Chen	CHEN3608/EM	2098

23364   7590   01/17/2007
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EXAMINER
FILE, ERIN M

ART UNIT	PAPER NUMBER
2611	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/17/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

	Application No.	Applicant(s)
Office Action Summary	10/724,742	CHEN, HUNG KUN
	Examiner	Art Unit	
	Erin M. File	2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>02 December 2003</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-11* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>02 December 2003</u> is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some *   c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Drawings

1.   The drawings are objected to under 37 CFR 1.83(b) because they are

incomplete. 37 CFR 1.83(b) reads as follows:

> When the invention consists of an improvement on an old machine the drawing must when possible
> exhibit, in one or more views, the improved portion itself, disconnected from the old structure, and also
> in another view, so much only of the old structure as will suffice to show the connection of the invention
> therewith.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to

the Office action to avoid abandonment of the application. Any amended replacement

drawing sheet should include all of the figures appearing on the immediate prior version

of the sheet, even if only one figure is being amended. The figure or figure number of an

amended drawing should not be labeled as "amended." If a drawing figure is to be

canceled, the appropriate figure must be removed from the replacement sheet, and

where necessary, the remaining figures must be renumbered and appropriate changes

made to the brief description of the several views of the drawings for consistency.

Additional replacement sheets may be necessary to show the renumbering of the

remaining figures. Each drawing sheet submitted after the filing date of an application

must be labeled in the top margin as either "Replacement Sheet" or "New Sheet"

pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the

applicant will be notified and informed of any required corrective action in the next Office

action. The objection to the drawings will not be held in abeyance.

2.   The drawings are incomplete as they do not illustrate a method as described in

claims 1-5

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4.   Claims 1-3, 6, 8, 9 are rejected under 35 U.S.C. 102(e) as being anticipated by

Ibrahim et al. (U.S. Pub. No. 2004/0052306).

Claims 1, 6, Ibrahim discloses:

- reconstructing simulated input data symbols ($X'_K[n]$) that simulate the original

  data symbols ($X_K[n]$) (fig. 3, 104, [0038], line 7);

- delaying the actual received data symbols ($R_K[n]$) such that the delayed actual

  received data symbols ($Q_K[n]$) are synchronous to the simulated input data

  symbols ($X'_K[n]$) ([0061], lines 7-8, fig. 8, 118);

- calculating a channel response estimate ($W_K[n]$) of one subchannel k based on

  said delayed actual received data symbols ($Q_K[n]$) and said simulated input data

  symbols ($X'_K[n]$) according to the Least Mean Square algorithm ([0059], lines 4-5,

  describes an alternate LMS embodiment of the channel response determination

  module 106 of fig. 3, see fig. 3 which shows channel response determination

module 106 determined from delayed spread spectrum complex baseband

samples 112 and reconstructed spread spectrum complex baseband samples);

- estimating virtual received data symbols ($Y_K[n]$) based on said channel response

  estimate ($W_K[n]$) and the simulated input data symbol ($X'_K[n]$) (see fig. 8.

  reconstructed baseband samples are multiplied by multipliers 164 with estimated

  channel response $c(1..n)$ and summed);

- and calculating a different quantity ($e_K[n]$) between the delayed actual received

  data symbol ($Q_K[n]$) and the estimated virtual received data symbols ($Y_K[n]$) to

  represent the channel noise of said subchannel k ([0061], lines 6-8, see fig. 8,

  reconstructed signal 116 is input to summing module 168 along with delayed

  spread spectrum baseband sample 112 to create error signal 174).

Claims 2, 8, Ibrahim further discloses in the simulated input data symbols ($X'_K[n]$)

reconstructing act, the original data symbols ($X'_K[n]$) being taken as the simulated input

data symbols ($X'_K[n]$) while the original data symbols ($X_K[n]$) are exactly known to the

receiving unit [(0007), lines 4-6].

Claims 3, 9, Ibrahim further discloses de-mapping and decoding the actual received

data symbols ($R_K[n]$) on each subchannel k to extract bit-stream data and encoding and

mapping said bit-stream data to reconstruct said simulated input data symbols ($X'_K[n]$)

([0032], lines 7-8) .

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

6.   Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Ibrahim et al. (U.S. Pub. No. 2004/0052306) as applied to claims 3 and 9 above, and

further in view of ten Brink (U.S. Patent No. 6,611,513).

Claims 4, 10, Ibrahim fails to disclose the simulated input data symbols ($X'_k[n]$)

reconstructing act further has a de-interleaving act after the actual received data

symbols ($R_k[n]$) de-mapping act, and an interleaving act after the bit-stream data

encoding act, however, ten Brink discloses a de-interleaving act after the actual

received data symbols ($R_k[n]$) de-mapping act, and an interleaving act after the bit-

stream data encoding act (fig. 3, data from demapper 29 is fed to de-interleaver 26,

coded bits $L_{D,p}$, are fed into interleaver 28). Because the interleaving of data is well

known in the art for increasing data processing speed, it would have been obvious to

one skilled in the art at the time of invention to incorporate the interleaving and

deinterleaving of the data as disclosed by ten Brink into the invention of Ibrahim.

7.   Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over
Ibrahim et al. (U.S. Pub. No. 2004/0052306) as applied to claims 1 and 8 above, and
further in view of Foster (U.S. Pub. No. 2005/0063493).

Claims 5, 11, Ibrahim fails to disclose in the simulated input data symbols ($X'_k[n]$)
reconstructing act, said actual received data symbols ($R[n]$) on the subchannel k being
directly mapped to form the simulated input data symbol ($X'_k[n]$) for said subchannel k,
however, Foster discloses actual received data symbols ($R[n]$) on the subchannel k
being directly mapped to form the simulated input data symbol ($X'_k[n]$) for said
subchannel k (p. 8, line 98). Because Foster discloses that his reception method
significantly reduces data detection complexity (abstract, lines 7-8), it would have been
obvious to one skilled in the art at the time of invention to incorporate the direct mapping
of the data as disclosed by Foster into the invention of Ibrahim.

8.   Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ibrahim et
al. (U.S. Pub. No. 2004/0052306) as applied to claim 6 above, and further in view of
Isozaki (U.S. Patent No. 5,406,569).

Claim 7, Ibrahim fails to disclose while the original data symbols ($X_k[n]$) are exactly
known to the receiving unit, the reconstructing unit takes the original data symbols
($X_k[n]$) as the simulated input data symbols ($X'_k[n]$), and the actual received data
symbols are directly passed through the delay line without a delaying process, however,
Isozaki discloses while the original data symbols ($X_k[n]$) are exactly known to the
receiving unit, the reconstructing unit takes the original data symbols ($X_k[n]$) as the

simulated input data symbols ($X'_k[n]$), and the actual received data symbols are directly

passed through the delay line without a delaying process (col. 8, lines 8-11). The

beypassing of delay means would reduce the overall computational time of the

estimation process and would have therefore been obvious to one skilled in the art at

the time of invention to incorporate the error calculation as disclosed by Isozaki into the

invention of Ibrahim

9.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Erin M. File whose telephone number is (571)272-6040.

The examiner can normally be reached on M-F 1:00PM-9:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone

number for the organization where this application or proceeding is assigned is 571-

273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for

published applications may be obtained from either Private PAIR or Public PAIR.

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For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Erin M. File

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1/3/2007

MOHAMMED GHAYOUR
SUPERVISORY PATENT EXAMINER